

EXAMINERS' REPORT

November 2022 examinations

Subject F101 — *Health and Care* Fellowship Principles

INTRODUCTION

The attached report has been prepared by the subject's Principal Examiner. General comments are provided on the performance of candidates on each question. The solutions provided are an indication of the points sought by the examiners, and should not be taken as model solutions.

QUESTION 1

Candidates performed well if they applied their answers to the specific issue of liquidity risk as set out in the question. Candidates who did well also organized their answers to address both parts of the question, i.e. the liquidity requirements and how to manage them. Many candidates seemed to be answering a different question such as describing how a unit-linked long-term care contract operates or what an investment strategy for such a contract should generally include.

- Long term contract which may or may not have fund protection, and which may or may not offer indemnity benefits
 - o Fund protection refers to the underlying unit fund not being used to fund benefits and insurance benefits are payable from the non-unit fund. The level of fund protection can vary
 - o The greater the fund protection, the greater the liquidity risk
- The benefits may be paid as a single payment, or series of payments and may be payable for life
- With significant uncertainty in the timing of the benefit and the length of time for which the benefit will need to be paid (longevity risk)
- There is liquidity risk if benefit payment sooner than expected or for longer than expected; exacerbated if indemnity and not stated sums.
- Benefit amount may be linked to performance of underlying investments if there are no guarantees and no/limited fund protection.
 - o If unit fund is benefit, then liquidity risk is reduced, because can simply realise the assets underlying
 - o Any investment or insurance guarantees significantly increase the risk
- In which case investment risk is a significant factor – will impact pricing and require greater levels of liquidity
- Need to forecast benefit payments under various scenarios
- To determine appropriate investment strategy – amount of cash holding
- Since return on cash lower, too much cash will impact investment return
- And too little will mean risk of having to realise investments at inopportune time
- Some liquidity risk also stems from the expenses of administering the policy

QUESTION 2

Part i)

- *A number of candidates didn't understand the basics of coinsurance / original terms arrangement*
 - o *Some just described a typical risk premium reinsurance arrangement, or gave elements of any reinsurance arrangement i.e. not particular to coinsurance arrangement*
- *Disappointing number did not mention anything about sharing lapse or investment risk*
- *A few candidates mistook coinsurance for reciprocal arrangements*
- *A few candidates listed the benefits of reinsurance in general (smoothing results, risk transfer etc.) this achieved no marks as was not asked for*

Part ii)

- *Some candidates did not know what a deposit back arrangement was – explanations of experience refunds / profit shares; loans from reinsurer to insurer; bank accounts to*

drawdown funds etc. were used. Deposit back arrangements are not loans. None of these explanations achieved any marks

- *Some assumed that the reinsurer passes on a capital amount immediately to the insurer, which needs to be repaid at maturity.*
- *Most candidates managed to score marks in this part of the question*
- *A few candidates did not write enough for a 4 mark question*

Part iii)

- *Candidates generally did well on this question*
- *Some incorrectly assumed large reserves and stated that the 20 year term is “long term” (which it isn’t) and assumed that the large reserve would want to be held by the reinsurer, this is the exact reason why deposit back arrangements are in place – to remove a potentially large reserve from the reinsurer’s balance sheet (and why it is not necessary for term CI)*

i)

Coinsurance – can be either quota share or surplus whereby all aspects of the original contract are shared hence the premium is split between the insurer and reinsurer in a fixed proportion and the claims are split in the same proportion. This means the reinsurer will generally share in full risks of the policy including investment and early lapse.

ii)

Deposits back – when the supervisory authority requires the reinsurer to deposit back its share of the total reserve to the cedant under a coinsurance arrangement.

Even if not a requirement, this is sometimes done so that the cedant can maintain the reserve and maximise the funds to invest while still getting benefit of reinsurance.

The arrangement will also mitigate against reinsurer default risk.

The reinsurer can also benefit if it is a large international reinsurer and wants to avoid investing in an unfamiliar market.

Improves trust between insurer and reinsurer

May have mutually beneficial balance sheet effects

iii)

In this instance the reserve is likely to be small since the CI policies do not carry any surrender or maturity benefits (there is no savings element) and are term policies. The benefit therefore of depositing back a proportion of the small reserve is therefore limited.

And may result in more costs, paperwork, admin which outweighs the advantages of having a deposit-back arrangement

QUESTION 3

This question had a significant bookwork component (parts i to iii), so well-prepared candidates generally scored well. The difference between “worksite marketing” and “employer-sponsored PMI” was not always well-explained.

Parts iv to vi were fairly well-answered. Some candidates misread “employer” or “insurer”, and as such lost out on easy marks between the three parts. In part iv, candidates that just used generic terms such as “diversify” or “cross-subsidise” without applying it to the scenario, did not generate enough marks. An increase in policies sold do not necessarily mean an increase in profits, as it would depend on the profitability of the business sold.

Overall candidates scored poorly on part vii, with many jotting down a list of generic managed care interventions, instead of focusing how existing programmes/interventions would have to be expanded and/or adapted for groups joining. Candidates that applied their bookwork knowledge to the question, scored well.

i)

- Select products for their clients from all or most of those available in on the market
- Must act independently of any particular insurance company (although they can be owned by one)
- Their aim is to find the contract that best meets situation of their clients
- They may be remunerated via commission payments (by the companies whose products they sell) or they may alternatively receive a fee from their clients

ii)

- Insurance distributors can gain marketing access to all the individual members of a particular group, such as the employees of a particular company
- The distributor aims to attract those who have not made their own insurance provision for healthcare needs and do not have adequate employer-paid cover

iii)

- Group PMI involves the sale of a single policy to the employer. / The employer, as policyholder, purchases the insurance protection for the employees, on their behalf.
- In worksite marketing, the workplace is being used as a convenient way of accessing a large number of potential individual clients.
 - Those who do buy policies will have individual contracts with the insurance company; they will pay the premiums and the contract will exist independently of whether or not they remain in that particular employment,
- Under a group PMI contract it is unlikely for any employee to remain covered by the insurance once they have left that employment

iv)

- It diversifies the risk pool, for example, the company could get exposure:
 - In different economic sectors of the market
 - In different geographic regions
 - Of active workforce members
 - who are generally in good health
 - and of a pre-pensioner age
- It reduces anti-selection and therefore reduces claims risk
 - In individual PMI business, it is the broker/customer who is 'initiating the sale', ie voluntarily selecting a policy contract that is in their best interest.
 - This is contrasted against group PMI where the employer selects the group cover for its employees, which is often a condition of employment (ie a strong element of compulsion), thereby significantly reducing anti-selection risk

v)

- Employers usually obtain their group insurance policies from brokers. The broker will be responsible for most of the communication and data gathering.

The insurer will therefore have limited opportunities to

- Build a relationship with the employer
- Influence the retention of the business
- Influence the risk attitude and risk management of the employer

vi)

- Employers that offer better benefits are more likely to be able to recruit and retain better staff than others, all else being equal.
- Better staff satisfaction and productivity (also from better care)
- Provides assurance that all employees have a minimum level of private medical cover, ie can access doctors and medication when sick, and recover quicker (where appropriate)
- PMI insurer can offer corporate wellness days and often have value-add reporting and insights to employer
- There may be tax benefits for the company to arrange the insurance in this way

vii)

- Hospital networks should be evaluated in the areas in which large employers are based, ie need to have hospitals within a reasonable radius from the majority of employee base as part of the network.
- Specialist networks should be established/re-evaluated in the medical areas that the employees are most at risk of needing treatment from.
 - (This would also apply to Family Practitioners (“GPs”) as well as pharmacy networks.)
- Wellness days (eg for preventative health screenings) should rather take place at the workplace (employer) than at the wellness day events target for individual policyholders.
- The wellness communications should be tailored to the specific characteristics of the employer (eg mining workers and call centre agents would have different health challenges)
- Could recruit a doctor/nurse to be based at the employers’ location to deal with employees’ medical problems as soon as they arise, or a tele-health solution (eg virtual 24/7 nursing service).
- Should try and extend managed care interventions to be put into practice for the employers themselves, eg minimum standards of health and safety within the workplace

QUESTION 4

For part i, many candidates didn’t think across the spectrum of potential benefits, i.e. listed every possible type of doctor instead of thinking more broadly. I limited the number of marks I gave to different “categories” of OH benefits as a result – i.e. you needed to demonstrate that you thought across the various categories to get 3/3. In general, candidates performed well.

Part ii, was mostly well-answered. Most candidates understood the need for risk adjustment. Where most fell short is that they typically only covered 2 of the following 3 aspects

- Demand side factors, which required risk adjustment to be performed based on demographics, etc.

- *Supply side factors, where many brought up case mix and wanted to perform adjustments based on this, which was fine, but the vast majority missed the obvious – hospital size*
- *Alternatives to removal from the network*

As a result, some marks were lost.

Overall, the question was well-answered.

i)

- GP visits
- Specialist visits
- Scopes and scans
- OTC/prescription medication
- Chronic condition management
- Optical benefits (tests, lenses, frames, contacts)
- Dental benefits (visits, minor treatments, etc)
- Maternity benefits (scans, tests check-ups)
- Screening tests/benefits
- Basic radiology
- Pathology

ii)

- On a RPLPM basis, yes, Hospital A is significantly more expensive (>80% more expensive),
- However, significant further analysis is required to determine whether, on a risk-adjusted basis, Hospital A is more expensive than Hospital B, and whether intervention as drastic as removal from the network is justified
- The quality of the care provided by the hospitals are also of utmost importance, and quality should not be compromised in order to save costs
- So given the information, we cannot conclude which hospital is more expensive, and any recommended action is still premature.
- It is important that the investigations perform adjust the experience for the demand-side cost drivers which are outside the control of the Hospital
- Supply side factors should be considered separately, and these can be used to penalise/reward the hospital in terms of the network arrangement (typically related to both quality and cost containment)
 - Significant judgment may be required here in the measurement and interpretation of quality
 - Factors that increase relative cost, but significantly improve quality and outcomes should not be used to penalise the hospital
 - E.g. use of appropriate technology, infrastructure, staff (doctors, specialists, etc.)
 - Differing protocols, policies and procedures may have a significant impact on overall hospital costs and this should be considered when recommending any action
- Certain supply factors, e.g. if type of hospital differs significantly, this will make the experience incomparable (not like-for-like) and some other methodology for cost comparison will be required
 - E.g. only considering procedures, services, admissions that are comparable (subsets of overall offerings)

- Compare the risk profiles of the persons on Hospi + that were admitted to Hospital A and B, respectively
 - o Age analysis
 - Is there a difference in the average ages of policyholders receiving treatment in hospital
 - Older people are expected to have more frequent and more severe hospitalisations
 - o Gender
 - Females during the child-bearing years are expected to have more frequent hospitalisations than men of corresponding ages due to child birth and neo-natal ICU costs
 - Conversely, older men typically experience more hospitalisations than females
 - o Chronic status
 - Chronic conditions, and indeed having multiple chronic conditions, are associated with more frequent and more severe hospitalisations
 - Compare the chronic incidence of those policyholders admitted to the respective hospitals.
 - o The count and severity of main types of admissions need to be considered and assessed relative to a benchmark
 - o This benchmark can be set with removing very volatile admission types, or those that are typically very complex and abnormal.
 - Maternity admissions with neonatal ICU will be significantly more expensive than those without
 - Procedures with complications will be significantly more expensive than those without. Etc.
 - Appropriate DRG and episode grouper methodology need to be considered and consistently applied – not as simple as looking at gross claims plpm between hospitals
- It is important to consider the geographical location of the hospitals as this may impact admission rates and hence claims plpm.
 - o A hospital close to factories or other hazardous operations may see more accidents, or more pollution-related admissions, pushing up their relative plpm costs when compared to another hospital
 - o The availability of primary care facilities and other, non-hospital healthcare in the nearby area may also influence admission rates
- Hospital type/speciality (supply side consideration) – hospitals specialising in different services will necessarily have different experience and this needs to be borne in mind.
- Types of treatments, admissions covered, etc. need to be considered.
 - o Splitting costs by various categories in-hospital – accommodation, surgical, supplies, medication, doctors + specialists.
 - o A small hospital may refer complex cases to larger hospitals and only admit simple cases, and as a result, seem to have great relative experience
 - o It will be catastrophic if the larger (seemingly more costly hospital) is then removed from the network as a result,
 - o and policyholders will be unable to get treatment they require, or may need to be referred elsewhere – perpetuating the problem.
- After considering all these factors and allowing appropriately for them, the insurer can consider whether intervention is required and what type of intervention

- Removal from network should not be the first option
- Consider managed care interventions
 - Pre-authorisation to ensure only necessary admissions
 - Protocols to ensure standard of treatment appropriate
 - Alternative reimbursement strategies to facilitate cost sharing
 - High-cost case management/discharge planning to ensure hospitalisations are managed and costs controlled
 - Utilisation reviews or clinical audits to identify significant differences in practices between hospitals

QUESTION 5

i)

The candidates who aimed for a wide range of different product design features, and discussed the variations of each, performed well in this question. The pitfall for some candidates was to identify only one product design feature, and outlining the variations thereof in detail (for example, only elaborating on tiered benefits).

ii)

Most candidates were unable to demonstrate a sufficient breadth of understanding to score well and subsequently over-explained the same concepts or wrote vague statements. The candidates who differentiated themselves adopted a structured approach to this question (for example, separating their answers for the insurer and each stakeholder), which enabled optimal idea generation. A common mistake made by candidates was to focus their answer to this question on pricing considerations, which was the objective of the following question, Part (iii).

iii)

Most candidates performed well in this question with a coherent plan and structure to approach pricing related questions. The candidates who did not perform well in this question made numerous generic statements without linking the consideration to a price determining factor (for example, "consider regulations", "consider sales channel", etc.) Furthermore, some candidates did not address the question by giving price determination considerations, but rather described regulatory approval, checking that the additional conditions are insurable interests, making the sales channels aware, etc.

(i)

- Accelerator, rider or stand-alone benefit
- May be a traditional non-profit product, indexed premiums or benefit or unit-linked product
- Tiered benefits – variations in whether benefits are tiered or not, the number of tiers and the differentials in sum assured in the tiers.
- Whether multiple reinstatements are permitted or not
- Variations in the number and types of diseases covered
- Cover terminating at different ages
- Variations in definitions of diagnoses
- Variations in deferred period
- Speciality benefits – women only, children's benefit add-on, TPD/terminal benefit

(ii)

- There are two groups of policyholders – those who are eligible for the additional cover and those that are not.
- Those who are eligible may perceive value in the additional coverage.
- Those who are not eligible may be unhappy about not being offered the additional coverage if they are aware of the additional benefit
- Those who are not eligible may lapse their cover in search of similar cover elsewhere (at similar premiums)
- Potential advantage for intermediaries / distribution agents of being able to increase commission off the same base of customers due to the additional premium that would be charged for the extended cover
- May be easy to sell if the additional diseases covered are attractive to policyholders and the incremental premium is low
- Provides an opportunity for contact with client base which may allow for the sale of additional products
- May not be worth the effort if the additional premium (and thus the additional commission) is very small
- Increased complexity of the product may be difficult to explain.
- Reduced comparability with competitor products may be an advantage or a disadvantage
- Underwriting-free so quick turn-around time and guaranteed acceptance
- Cost of providing cover for additional diseases may be low – additional diseases may be of lower incidence than those in the standard policy
- Anti-selection risk will depend on the duration of the policies in force (know underwriting status at time of application and also know that they have not claimed on standard diseases)
- Anti-selection risk may be significant for policies with long durations
- Anti-selection by age is also likely to occur (older policyholders are more likely to take out additional cover than younger policyholders). May wish to only offer the option to younger policyholders.
- May lead to fewer selective withdrawals (remind policyholders about their cover, and enhance sense of value)
- Policyholder engagement with a broker may result in new comparisons of critical illness products– policyholders may switch insurers instead of extending cover.
- Additional complexity – two different benefit designs, system changes, different policy wording
- Response time will be quick due to no underwriting – this may enhance policyholder perception of efficiency and service levels

(iii)

- The starting point for pricing the additional benefit would be the existing pricing model.
- Assume a take-up rate for the option– this would affect the choice of model points for pricing the additional benefit.
 - Sensitivity testing various take-up rates and the resultant impact thereof will be important
- Assumptions would need to be made about the health status of those exercising the option
- This would depend on factors such as the duration that the policy has been in force and the age of the policyholders (is the most critical factor).

- It would be prudent to allow for a degree of anti-selection in this assumption.
- The claim inception rate assumption will need to be adjusted (for the affected policies) to allow for the additional diseases
- The data on the incidence of the additional diseases will need to be obtained for external sources.
 - For example reinsurers, academic studies, international experience
- With the necessary adjustments made to reflect expected experience (with allowance for anti- selection)
- All the other assumptions in the pricing model would need to be updated with more recent data e.g. expenses, investment return.
- Any increases in expenses (e.g. system changes, marketing of new benefit) would need to be taken into account.
- Commission can be allowed for according to the terms agreed with brokers (or other methods of distribution)
- The allowance for profit may need to be changed. For instance the profit requirement may be lower given the potential for greater retention of business.
- Withdrawal assumptions would also need to be adjusted taking into account that the change in benefit may result in greater retention (or alternatively that the contact with the broker may result in business being diverted away)
- Given the uncertainty around a new benefit, take-up rates, and the incidence rates of the new diseases various scenarios would need to be run, and the sensitivity of the assumptions will need to be tested.

QUESTION 6

i) Fairly well-answered, however, many candidates gave very superficial commentary, only considering the change in experience (up/down) and not exploring the likely causes/impacts thereof which would be of much interest to the Board in making decisions. Candidates who separated the elements and methodically worked through each of them tended to score better.

ii) Well-answered by most

iii) Overall, not well-answered. Candidates considered a too narrow range of considerations and often did not apply to the given (abnormal) scenario at hand and made overly generic statements.

i)

- 2020 saw claims experience significantly improving – 23.5% lower claims PLPM
- With 2021 returning to almost normal levels, but not quite – 5.9% lower than in 2019 (or 23.1% higher than 2020)
- As noted, claims patterns have shifted significantly, but the insurer can expect claims to revert back to normal levels in reasonably short time frame (as is already being seen)
- All categories decreased in 2020 and 2021, relative to 2019, other than emergency care (which increased)
- this is not unexpected given that the expectation in epidemic times is that emergency care costs will rise
- all other categories of claims may have an element of selection present – or policyholder choice - e.g. Day2day claims/elective surgeries

- this may result in pent-up demand – people merely delaying necessary treatments/surgeries as a result of the pandemic, only to have these done at a later stage
- this can result significantly worse claims experience in the near future (as opposed to merely reverting back to normal levels)
- consider setting aside additional reserves for these
- these delays may also have resulted in many persons not timeously receiving necessary care, resulting in worse/poorer health outcomes down the line – and increased claims going forward
- the increase in membership is promising – many people now noticing the importance of healthcare
- membership growth has been 10% from 2019 to 2020 and from 2020 to 2021 (compared to an average growth of 3.33% on average for the preceding 5 years)
- may be anti-selective joins which the insurer needs to watch out for
- selective lapsing after the epidemic has passed is possible, which may worsen claims experience going forward
- or may be an opportunity for increased sales, given that there may be a greater awareness of healthcare risks and the need for insurance cover – NB to consider what competitors are doing and their experience
- insurer may be able to achieve economies of scale; or conversely, there may diseconomies of scale if new systems, etc. is required for the expansion
- new business strain for new joins may erode the better experience, plus higher levels of reserves required for the new business

ii)

- The insurer can use the savings to implement lower premium increases over the coming few years
 - o i.e. subsidise premium increase to stay attractive and to keep policyholders happy
 - o or potentially decrease premiums (depending on what competitors are doing)
- The insurer can improve benefit richness
 - o i.e. offer additional benefits or higher limits or lower co-pays
- The insurer may retain the savings as a capital buffer in case experience worsens after the epidemic
 - o Likely pent-up demand for elective surgeries – so additional reserves to fund these makes sense
- The surplus can be applied to grow the business – allow for the new business strain of selling more policies
- Other strategic initiatives (mergers/acquisitions/new products) may be pursued
- Screening/wellness benefit enhancements – due to many seemingly having foregone primary healthcare and may be in poorer health than they are aware of, to try and prevent further downstream catastrophic healthcare costs
- The profits may be distributed to the shareholders – or part thereof distributed (declaring a dividend).
- Part of the profits can be distributed to staff/management in the form of bonuses

iii)

- Before making a decision about the distribution of the surplus, the insurer needs to consider the source of the surplus,
 - o in this case reduced overall demand due to the epidemic
- The insurer needs to consider whether what was observed over the past 2 years will continue or not, and if not, if there will be some over-correction in future
 - o E.g. pent-up demand
- Any decision needs to be prudent to allow for the level of uncertainty that exists
 - o Only 2 years' information is available
 - o The epidemic is unprecedented and the experience is abnormal
 - o There may be additional waves, with different impacts in the development of the epidemic
 - o There may be significant regulatory/tax changes in future
 - o Scenario analyses/stochastic modelling can be used to evaluate the level of uncertainty analytically
- Given that the business has been experiencing increased volumes, the insurer is likely experiencing increased levels of new business strain, requiring additional capital
 - o The insurer needs to consider whether this growth in membership seen over the past 2 years is likely to continue
 - o And the level of capital required to support this growth
 - o There may be particularly capital intensive undertakings required, e.g. new premises, new systems, hiring additional staff, etc.
- Distribution of surplus to policyholders, staff, shareholders will result in it being unavailable for any other purposes
 - o Fairness between key stakeholders needs to be considered
 - o Staff retention and motivation will be improved if distributed to them
 - o A dividend to shareholders will increase the share price
 - o Distribution to policyholders will ensure customer satisfaction and retention – being mindful of not creating expectations of future distributions if this is unusual and not expected to be repeated
- Any regulatory requirements w.r.t. such distribution of surplus or policy wording, etc. needs to be considered
- The tax implications of any distribution or any of the above methods needs to be taken into account
- Any decision taken should be done with consideration for the long-term impacts and overall strategic aims of the insurer
- Consideration needs to be given to the experience of competitors and what they are doing or may be doing in future.
- Compare risk profile pre- and post-epidemic – if high-risk lives were the ones who succumbed to the epidemic, may result in better profile going forwards, and better experience
 - o Conversely, consider the profile of the increased number of new joiners – better or worse, and overall expected impact?

QUESTION 7

Overall, this question was not well answered by many candidates. Time may have been an issue for some here. Candidates who did well were able to score well on part (iv) (the calculation) as well as apply themselves throughout the other subparts.

Part (i) required candidates to apply their bookwork knowledge of the possible insurance reserves, and justify which were more appropriate for a short-term insurer than a long-term insurer. Many candidates failed to justify why the reserves were only appropriate for BetterMed and not BetterCare, and instead provided definitions of each of the reserves.

Part (ii) had three parts to the question. To score well, candidates need to address all three parts of the question and not just focus on several points for one or two of the parts. Most candidates were able to score points for each part. Candidates who did well were able to note that this was for extreme events (low probability but high frequency) and then go on to discuss stress testing and how this could be used.

Part (iii) required candidates to make a clear and well justified decision for both BetterMed and BetterCare as to whether a statistical approach is appropriate, given the information provided in the question. Some candidates just listed the merits about statistical and case-estimate approaches but did not apply it to the characteristics and information given about BetterMed and BetterCare. Many candidates discussed the size of the data set available but missed discussing the homogeneity and heterogeneity that could be expected in the data.

Part (iv) was a 7-mark question requiring candidates to use the basic chainladder approach to calculate the outstanding claims reserve. To score all 7 marks, candidates needed to clearly show all their calculations for the various steps in determining the outstanding claims reserve. Method marks were awarded where candidates had shown their workings but made a calculation error. It was expected that candidates would score well for this question, as the basic chainladder approach is fundamental in the PMI environment, however it appeared that a number of candidates struggled with working through all the steps involved in the calculation.

Part (v) required candidates to think of more than one approach to allowing for variation in development factors, and to clearly explain how they would be allowing for the variation. Candidates were not awarded credit for discussing why there may be variation in the development factors or what causes variation in development factors.

Part (vi) required candidates to apply their knowledge of processing patterns and think about how this may be impacted by a pandemic. Very few candidates scored any marks on this part as most candidates discussed the impact on claim amount rather than claims processing.

i)

- claims in transit reserve...
- ...ongoing benefit payments for BetterCare
- outstanding claims reserve...
- ...no settlement delays for BetterCare benefits
- incurred but not enough reported claims reserve (IBNER)...
- ...benefits known upfront for BetterCare
- equalisation or catastrophe reserve...
- ...pre-defined benefits/ not indemnity

ii)

- “1-in-200” year event represents an extreme event that has a significant impact on the claims of the insurer...
- ...forms part of PXA’s stress testing^[1]
- can be used to determine if PXA holds sufficient reserves to survive an extreme insurance loss event...
- ...which forms part of risk management and sensitivity testing process
- It may be used as a guideline for regulatory reserve requirements...
- ...which may be used to set the minimum capital threshold under regulatory reporting requirements

iii)

- Statistical approach is appropriate for BetterMed..
- ...run-off triangle data is for specific homogeneous groups of claims
- ...BetterMed is large and well-established
- ...claims data shown in run-off triangle appears stable
- ...aim would be to calculate IBNR
- ...BetterMed has a sufficient set of claims data
- For BetterCare, case-by-case may be more appropriate given heterogeneity between cases; large policies; irregular (large variation) in run-off patterns, long-term products, etc.

iv)

$$df_{0,1} = \frac{14,002 + 11,485 + 14,297 + 16,362}{13,582 + 11,003 + 13,582 + 15,872} = 1,038990359$$

$$df_{1,2} = \frac{14,144 + 11,744 + 14,893}{14,002 + 11,485 + 14,297} = 1,025060326$$

$$df_{2,3} = \frac{14,158 + 11,755}{14,144 + 11,744} = 1,000965698$$

By multiplying by development factors, complete run-off triangle for ultimate claims expected.

	0	1	2	3
DEC 21	13582000	14002000	14144000	14158000
JAN 22	11003000	11485000	11744000	11755000
FEB 22	13582000	14297000	14893000	14907382
MAR 22	15872000	16362000	16772037	16788234
APR 22	9861000	10245484	10502239	10512381

Total outstanding claims reserve, deduct claims paid from ultimate expected.

Total outstanding claims reserve = $14907382 - 14893000 + 16788234 - 16362000 + 10512381 - 9861000 = R1\,091\,997k$

v)

- Calculate the mean and standard deviation of the development factors
- ...create an acceptable range / confidence interval
- ...for example using the mean plus or minus two standard deviations
- ...exclude from calculations any development factors that fall outside the range

vi)

- the pandemic is more likely to impact the level of claims...
- whereas the processing patterns/development factors are more likely impacted by effects on operational functions...
- ...for both hospitals and providers
- if operational functions remain unchanged then development factors should be unaffected...
- ...but may be applied to higher or lower claim levels depending on any pandemic infection “waves”
- if the pandemic causes more complexity and limited capacity in staffing and system operation....
- ...development factors may show slower run-off trends

...development factors may show faster run-off trends if lower non-pandemic related claims mean faster operations and claims processing